

## ABSTRACT OF THIS DISCLOSURE

An apparatus for measuring the displacement of visco-elastoplastic media below a surface thereof comprises an upper plate mounted such that a displacement force exerted on the top surface thereof will move the upper plate a displacement distance downward toward a base. Guides maintain the upper plate and the base in alignment such that movement is along a displacement axis. A calibrated bias element exerts a calibrated bias force resisting movement of the upper plate toward the base. A displacement measuring device measures the displacement distance, and is operative to generate a movement signal corresponding to the displacement distance. A data acquisition system is operative to receive and record the movement signal, and calculate the displacement force exerted on the top surface of the upper plate required to move the upper plate the displacement distance against the calibrated bias force.